What is claimed is:

1. A porous material comprising a copolymer of at least one hydrophobic monomer and at least one hydrophilic monomer, wherein said copolymer further comprises at least one ion-exchange functional moiety selected from the group consisting of an acyclic secondary amine exclusive of polyethylenimine, a cyclic tertiary amine, a substituted acyclic amine, and a substituted cyclic amine.

2. The porous material of claim 1, wherein the porous material comprises a porous particle that comprises said copolymer.

3. The porous material of claim 2, wherein said copolymer is non-sulfonated.

4. The porous material of claim 2, wherein said substituted acyclic amine or said substituted cyclic amine is substituted by an electron withdrawing group.

5. The porous material of claim 2 wherein said hydrophobic monomer is divinylbenzene or styrene.

6. The porous material of claim 2 wherein said hydrophilic monomer is N-vinylpyrrolidone or N-vinyl acetamide.

7. The porous material of claim 2 wherein said copolymer is a poly(divinylbenzene-co-N-vinylpyrrolidone).

8. The porous material of claim 2 wherein the hydrophobic monomer is substituted by at least one haloalkyl group, and the ion-exchange functional moiety is formed by reaction of the haloalkyl group with an appropriate starting amine to form an amine selected from the group consisting of an acyclic secondary amine, a cyclic tertiary amine, a substituted acyclic amine, and a substituted cyclic amine.

9. The porous material of claim 8, wherein said haolalkyl is fluoromethyl, choromethyl, bromomethyl or iodomethyl.

10. The porous material of claim 8, wherein the appropriate starting amine is a primary amine selected from the group consisting of methylamine, ethylamine, propylamine, isopropylamine, butylamine, *sec*-butylamine, *iso*-butylamine, *tert*-butylamine, pentylamine, 1,1-dimethylpropylamine, 1,2-dimethylpropylamine, 1-ethylpropylamine, 2-methylbutylamine, isopentylamine, hexylamine, 1,3-dimethylbutylamine, 3,3-dimethylamine, heptylamine, 2-aminoheptane, octylamine, 1,5-dimethylhexylamine, 2-ethylhexylamine, 1-methylheptylamine, *tert*-octylamine, nonylamine, decylamine, undecylamine, dodecylamine, tridecylamine, tetradecylamine, pentadecylamine, hexadecylamine, heptadecylamine, octadecylamine, nonadecylamine, and eicosylamine.

11. The porous material of claim 10 wherein the primary amine is propylamine, isopropylamine, butylamine, *sec*-butylamine, *iso*-butylamine, pentylamine, isopentylamine, hexylamine, heptylamine, 2-aminoheptane, octylamine, 2-ethylhexylamine, dodecylamine, or octadecylamine.

12. The porous material of claim 8, wherein the appropriate starting amine is a cyclic secondary amine selected from the group consisting of azirane, azetane, azolane, azinane, azepane, azocane, azonane, azecane, diazatene, diazolane, diazinane, N-methyldiazinane, diazepane, diazocane, diazonane, diazecane, oxazetane, oxazolane, oxazinane, oxazepane, oxazocane, oxazonane, oxazecane, thiazetane, thiazolane, thiazinane, thiazepane, thiazocane, thiazonane, and thiazecane and imidazole.

13. The porous material of claim 12, wherein the cyclic secondary amine is azinane.

14. The porous material of claim 12, wherein the cyclic secondary amine is diazinane.

15. The porous material of claim 12, wherein the cyclic secondary amine is N-methyl-diazinane.

16. The porous material of claim 8, wherein the appropriate starting amine is an acyclic amine substituted with an electron withdrawing group selected from the group consisting of benzylamine, N-methylbenzylamine, N-ethylbenzylamine, N-propylbenzylamine, N-butylbenzylamine, N-pentylbenzylamine, N-hexylbenzylamine, N-heptylbenzylamine, N-octylbenzylamine, N-nonylbenzylamine, N-decylbenzylamine, N-undecylbenzylamine, N-dodecylbenzylamine, N-tridecylbenzylamine, N-tetradecylbenzylamine, N-pentadecylbenzylamine, N-hexadecylbenzylamine, N-heptadecylbenzylamine, N-octadecylbenzylamine, dibenzylamine, aniline, N-methylaniline, N-ethylaniline, N-propylaniline, N-butylaniline, N-pentylaniline, N-hexylaniline, N-heptylaniline, N-octylaniline, N-nonylaniline, N-decylaniline, N-undecylaniline, N-dodecylaniline, N-tridecylaniline, N-tetradecylaniline, N-pentadecylaniline, N-hexadecylaniline, N-heptadecylaniline, N-octadecylaniline, bis(2,2,2-trifluoromethyl)amine, phenethylamine, N-methylphenethylamine, 4-methylphenethylamine, 3-phenylpropylamine, 1-methyl-3-phenylpropylamine, N-isopropylbenzylamine, and 4-phenylbutylamine.

17. The porous material of claim 16 wherein the acyclic amine substituted with an electron withdrawing group is benzylamine, N-methylbenzylamine, or phenethylamine.

18. The porous material of claim 12, wherein the cyclic secondary amine is selected from the group consisting of oxazetane, oxazolane, oxazinane, oxazepane, oxazocane, oxazonane, oxazecane, thiazetane, thiazolane, thiazinane, thiazepane, thiazocane, thiazonane, and thiazecane.

19. The porous material of claim 17 wherein the acyclic amine substituted with an electron withdrawing group is N-methylbenzylamine.

20. The porous material of claim 18 wherein the cyclic secondary amine is 1,4-oxazinane.

21. The porous material of claim 4, wherein the electron withdrawing group is selected from the group consisting of halogens, aromatic groups, unsaturated groups,

ethers, thioethers, nitriles, nitro groups, esters, amides, carbamates, ureas, carbonates, sulfonamides, sulfones, and sulfoxides.

22. The porous material of claim 21, wherein the electron withdrawing group is a halogen, an ether, or an aromatic group.

23. The porous material of claim 4, wherein the electron withdrawing group of the amine has the effect of lowering the average pK_a of the conjugate acid of the amine as compared to the conjugate acid of the amine without the electron withdrawing group.

24. The porous material of claim 23, wherein the pK_a ranges from about 5 to about 7.

25. A porous material for solid phase extraction or chromatography comprising at least one porous particle of claim 2.

26. The porous material of claim 25 wherein said copolymer is a poly(divinylbenzene-co-N-vinylpyrrolidone).

27. The porous material of claim 26 wherein the poly(divinylbenzene-co-N-vinylpyrrolidone) has ion-exchange functional moieties present at a concentration of about 0.01 to about 1.0 milliequivalents per gram of porous material.

28. The porous material of claim 1, wherein the porous material comprises a monolith that comprises said copolymer.

29. A copolymer having the formula I:

$$-(-A-)_n-(-B-)_m-(-C-)_p- \qquad (I)$$

and salts thereof,

wherein the order of repeat units A, B and C may be random, block, or a combination of random and block;

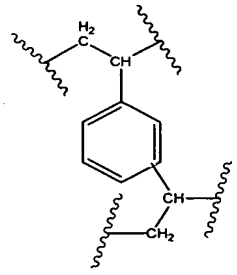
wherein

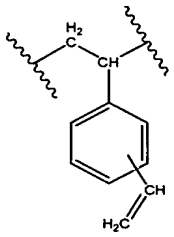
$$\frac{1}{100} < \frac{(p+n)}{m} < \frac{100}{1}$$

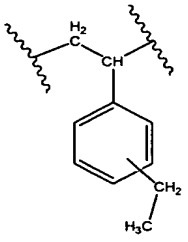
and

$$\frac{1}{500} < \frac{p}{n} < \frac{100}{1}$$

wherein A is selected from the group consisting of







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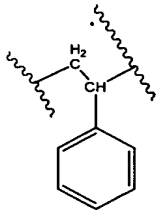
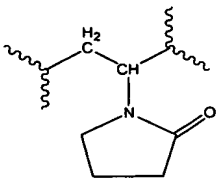
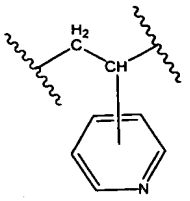
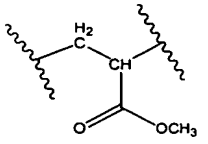


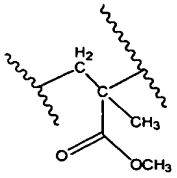
;

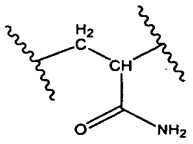
wherein B is selected from the group consisting of

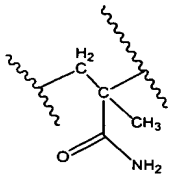












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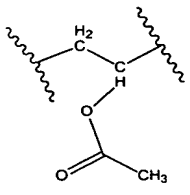
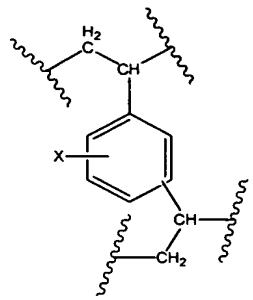
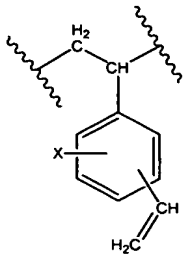
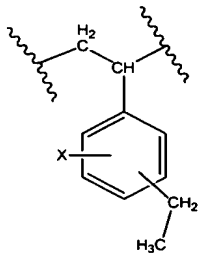
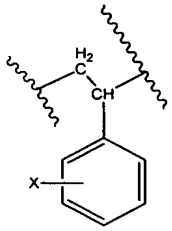


;

wherein C is modified A, wherein modified A is selected from the group consisting of




and

;

and

wherein X is $-CR_1R_2NR_3R_4$ wherein:

R_1 and R_2 are the same or different and each is hydrogen or C_1-C_6 alkyl;

R_3 and R_4 are the same or different and each is hydrogen, an electron withdrawing group, C_1-C_{20} alkyl, C_1-C_{20} alkyl substituted by an electron withdrawing group, or R_3 and R_4 taken together form a carbocyclic ring or a heterocyclic ring, wherein the carbocyclic ring or heterocyclic ring can be substituted by an electron withdrawing group, provided that (i) R_1, R_2, R_3, and R_4 are not all hydrogen; (ii) if R_1 and R_2 are hydrogen, then R_3 and R_4 are not both unsubstituted C_1- C_{20} alky; and (iii) if R_1 and R_2 are hydrogen, and either of R_3 and R_4 is hydrogen, then the other of R_3 and R_4 is not polyethylenimine.

30. A porous material comprising the copolymer of claim 29.

31. The porous material according to claim 30 wherein X is present at a concentration of about 0.01 to about 1.0 milliequivalents per gram of material.

32. The porous material according to claim 30 wherein X is present at a concentration of about 0.2 to about 0.8 milliequivalents per gram of material.

33. The porous material according to claim 30 wherein X is present at a concentration of about 0.4 to about 0.6 milliequivalents per gram of material.

34. The porous material according to claim 30 wherein X is present at a concentration of about 0.5 milliequivalents per gram of material.

35. The porous material according to claim 30 wherein the electron withdrawing group is selected from the group consisting of halogens, aromatic groups, unsaturated groups, ethers, thioethers, nitriles, nitro groups, esters, amides, carbamates, ureas, carbonates, sulfonamides, sulfones, and sulfoxides.

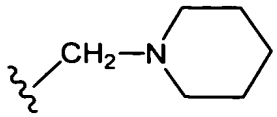
36. The porous material of claim 35, wherein the electron withdrawing group is a halogen, an ether, or an aromatic group.

37. The porous material according to claim 30 wherein R_1 and R_2 are hydrogen.

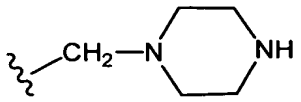
38. The porous material according to claim 30, wherein X is an amine selected from the group consisting of an acyclic secondary amine, a cyclic tertiary amine, a substituted acyclic amine, and a substituted cyclic amine.

39. The porous material according to claim 38, wherein X is formed by reaction of a haloalkyl group with an appropriate starting amine to form the amine selected from the group consisting of an acyclic secondary amine, a cyclic tertiary amine, a substituted acyclic amine, and a substituted cyclic amine.

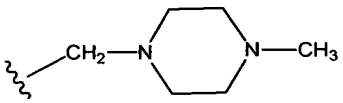
40. The porous material according to claim 30 wherein X is



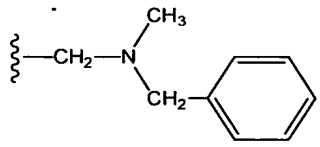
41. The porous material according to claim 30 wherein X is



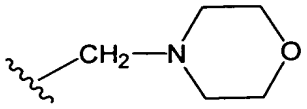
42. The porous material according to claim 30 wherein X is



43. The porous material according to claim 30 wherein X is



44. The porous material according to claim 30 wherein X is



45. The porous material according to claim 30 wherein the monomer of A is divinylbenzene or styrene.

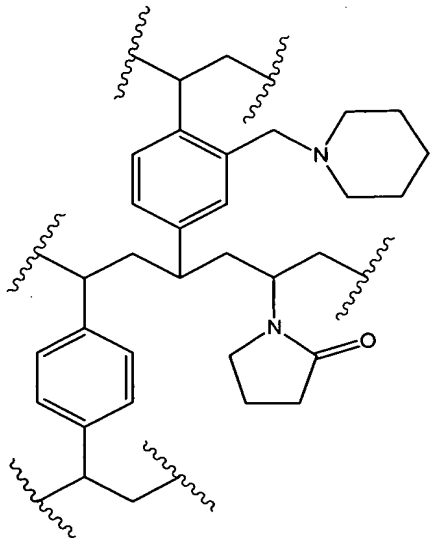
46. The porous material of claim 30 wherein the monomer of B is N-vinylpyrrolidone or N-vinyl acetamide.

47. The porous material of claim 46, wherein the porous material comprises poly(divinylbenzene-co-N-vinylpyrrolidone).

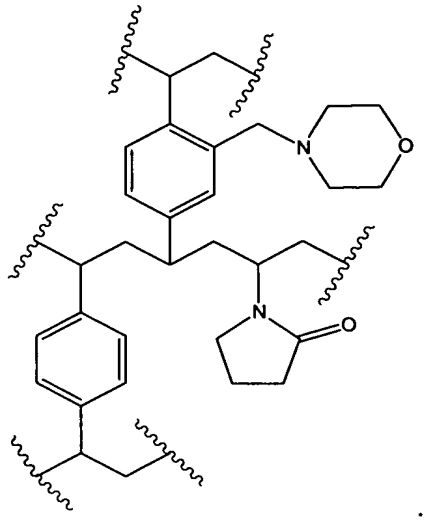
48. The porous material of claim 30, wherein the porous material comprises a porous particle that comprises the copolymer.

49. The porous material of claim 30, wherein the porous material comprises a porous monolith that comprises the copolymer.

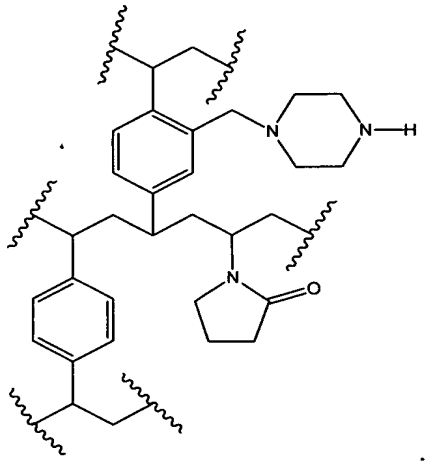
50. The copolymer which is



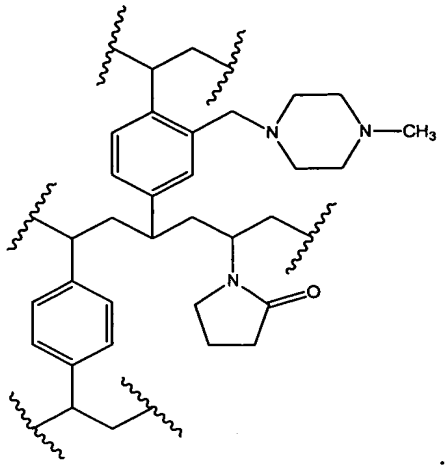
51. The copolymer which is



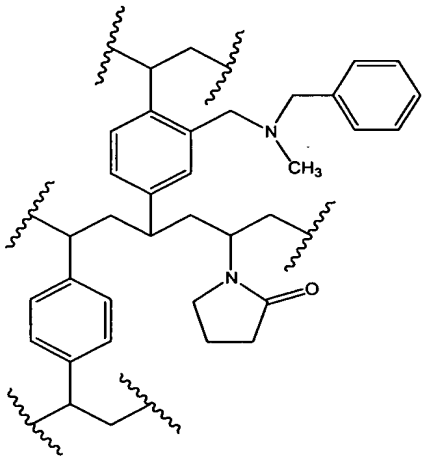
52. The copolymer which is



53. The copolymer which is



54. The copolymer which is



55. A porous material comprising the copolymer of any of claims 50-54.

56. The porous material of claim 55, wherein the porous material comprises a porous particle that comprises said copolymer.

57. The porous material of claim 55, wherein the porous material comprises a monolith that comprises said copolymer.

58. A solid phase extraction or chromatography material comprising the porous material of claim 1.

59. A solid phase extraction or chromatography material comprising the porous material of claim 55.

60. A porous particle comprising a copolymer of at least one hydrophobic monomer and at least one hydrophilic monomer, wherein said porous particle further comprises at least one ion-exchange functional moiety selected from the group consisting of an acyclic secondary amine exclusive of polyethylenimine, a cyclic tertiary amine, a substituted acyclic amine, and a substituted cyclic amine.

61. The porous particle of claim 60, wherein the copolymer comprises a compolymer of formula I recited in claim 29.

62. A porous monolith comprising a copolymer of at least one hydrophobic monomer and at least one hydrophilic monomer, wherein said porous particle further comprises at least one ion-exchange functional moiety selected from the group consisting of an acyclic secondary amine exclusive of polyethylenimine, a cyclic tertiary amine, a substituted acyclic amine, and a substituted cyclic amine.

63. The porous monolith of claim 62, wherein the copolymer comprises the copolymer of formula I recited in claim 29.

64. A method for removing or isolating a component form a mixture comprising:

contacting the mixture with a chromatographic material comprising the porous material according to claim 1, to thereby remove or isolate the component from the mixture.

65. A method for determining the level of a component in a mixture, comprising:

contacting the mixture with a chromatographic material comprising the porous material according to claim 1 under conditions that allow for sorption of the component onto the porous materials;

washing the chromatographic material having the sorbed component with a solvent under conditions so as to desorb the component from the porous materials; and

determining the level of the desorbed component.

66. A separation device comprising the porous material according to claim 1.

67. The separation device of claim 66, wherein said device is selected from the group consisting of chromatographic columns, cartridges, thin layer chromatographic plates, filtration membranes, sample clean up devices, solid phase organic synthesis supports, and microtiter plates.

68. The separation device of claim 66, wherein said porous material comprises the copolymer of claim 29.

69. A solid phase extraction cartridge comprising the porous material according to claim 1.

70. The solid phase extraction cartridge of claim 69 wherein said porous material comprises the copolymer of claim 29.

71. The solid phase extraction cartridge of claim 70, wherein the cartridge comprises an open-ended column that contains the porous material.